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Troubleshooting & Repairing Compact Disc Players

Homer L. Davidson

Third Edition

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Introduction

THE COMPACT DISC (CD) PLAYER HAS COME A LONG WAY IN the past 10 years. The little rainbow-reflecting disc has brought clear, crisp, noise-free reproduction of music to our ears. The digital music source can now be reproduced with more depth, greater detail, and more imaging than ever before. This new digital-to-analog technology has brought the ultimate in glorious sound. Like the phonograph record, the CD can be played on disc changer.

Like any electronic and mechanical device, the compact disc player can break down. The purpose of this book is to provide practical service data to help make CD repair much easier. It can help the beginner, intermediate, or experienced electronic student or practicing technician to further his or her knowledge with compact disc servicing methods. You can go as far as you want to with the easiest or the most difficult repairs. Troubleshooting and repairing compact disc players has opened up another field in consumer electronic maintenance.

This new third edition contains 13 chapters, beginning with the basic CD principles and hundreds of illustrations, including schematics and photos. Each chapter has a troubleshooting chart at the end. Chapter 2 explains how to clean and care for the compact disc. The laser pickup assembly is described thoroughly in chapter 3. How to troubleshoot the low-voltage power-supply sources is explained in chapter 4. Chapters 5 and 6 describe the signal circuits and servo system in the CD player. How the motor control circuits and motor circuit operate is listed in chapter 7. The D/A and audio output circuits are covered in chapter 8. Chapter 9 includes the critical electronic CD player adjustments and why they are made. Servicing the portable CD and boom-box CD player is described in detail in chapter 11, and chapter 12 covers the auto compact disc player and disc changers. The most important chapter in this book, chapter 13, shows you how to troubleshoot the symptoms and service the player. How to make CD adjustments

with scope waveforms is shown throughout the book. Most circuit drawings are comprised of actual CD circuits from popular models.

Many different service problems are related to today's electronic devices. Sometimes in electronic servicing, you cannot actually see the defective electronic component, so you must use test equipment to guide you through the circuit to locate the defective part. The compact disc player is no different because the laser beam that is essential for operation cannot be seen with the naked eye. Testing the laser diode with an infrared power meter is used in conjunction with several different types of test equipment. For this reason, you must be extremely cautious while servicing or working around the laser beam. Always keep a disc loaded on the turntable when servicing to prevent eye damage.

One of the most important tools that you will need to troubleshoot the compact disc player is the schematic diagram. More than 11 different compact disc player manufacturers have provided valuable service literature and schematics for this book. You cannot successfully service the compact disc player without a schematic diagram. It is just as important as a voltmeter or oscilloscope. The manufacturers provide needed service information, and this book would never have been written without their help.

Compact disc players are loaded with special components, such as surface-mounted parts (SMD), critical large-scale integration (LSI) and integrated circuit (IC) processors, optical lens-and-laser assemblies, and several different motor components. You should obtain these parts through the CD manufacturer, a manufacturer's service depot, or the manufacturer's dealer handling CD players. Very few universal parts are used in compact disc players. Always replace these special components with those with the original part number. Again, all parts should be listed in the manufacturer's service literature for that brand and model number.

All chapters in the third edition have been expanded with the latest CD information, charts, and many photos. The boom-box CD player is included with optical, signal processing, servo section, and troubleshooting data. How the automatic CD changer operates in both the tabletop and auto units, special CD circuits, carousel, roulette, and turntable loading and playing operations. The CD changer could have up to seven different motors.

Electronics

Praise for the best-selling previous edition:

". . . this practical guidebook gives professional technicians as well as students all the hands-on service information they need to repair problems in the latest CD-player makes and models."
—Popular Electronics

". . . author Homer L. Davidson, a well-known electronics troubleshooter, covers every circuit and includes time-saving service hints and troubleshooting methods."
—The Audio Amateur

Essential information and authoritative advice on CD player repair, featuring the latest models and new flowcharts!

From a respected author of reliable, time-saving references for electronics technicians and hobbyists, this is the most comprehensive, practical book on CD player troubleshooting and repair you can buy. It's chock-full of vital information and step-by-step techniques for diagnosing and correcting problems with home, car, and portable CD players.

Even better than its best-selling predecessors, this updated edition covers the newest makes and models, addresses technological advances, and adds helpful flowcharts throughout. Homer L. Davidson gives you essential background information on the principles common to all CD players before providing hand-on instructions on how to:

- Remove and replace defective laser heads
- Repair servo systems
- Locate and replace defective slide, load, and disc motors
- Service signal circuits using an oscilloscope
- Build an infrared tester
- And more

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